

CLAIMS

What is claimed is:

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1. An internally threaded fastener assembly comprising:
a stemmed washer having a spring washer portion, a standoff portion integral with the spring washer portion, and a retaining portion; and
an internally threaded fastener retained in the stemmed washer by the retaining portion.
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2. The assembly of claim 1, wherein the spring washer portion is generally conical.
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3. The assembly of claim 1, wherein the spring washer portion extends from the standoff portion at an angle, wherein the spring washer portion is elastically deformable relative to the standoff portion.
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4. The assembly of claim 3, wherein the spring washer portion is biased to extend from the standoff portion at an acute angle.
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5. The assembly of claim 1, wherein the fastener includes a peripheral flange and the retaining portion extends radially inwardly to capture the peripheral flange and thereby to retain the fastener in the assembly.
6. The assembly of claim 1, wherein the fastener is rotatable with respect to the stemmed washer.
7. The assembly of claim 1, wherein the standoff portion forms a hollow right cylinder.

8. The assembly of claim 1, wherein the standoff portion has a variable effective length.

9. An internally threaded fastener assembly comprising:

a threaded nut; and

a base having a washer portion, a standoff portion, and a retaining portion extending from the washer portion and capturing the threaded nut, wherein the washer portion extends from the standoff portion at an acute angle relative to the standoff portion.

10. The assembly of claim 9, wherein the washer portion is generally conical.

11. The assembly of claim 9, wherein the washer portion is elastically deformable from a first angle relative to the standoff portion to a second angle relative to the standoff portion.

12. The assembly of claim 10, wherein the washer portion is biased toward the first angle relative to the standoff portion.

13. The assembly of claim 9, wherein the standoff portion, the washer portion and the retaining portion form a single-piece structure.

14. The assembly of claim 9, wherein the threaded nut comprises a peripheral extension captured by the retaining portion.

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15. An internally threaded fastener assembly comprising:
an internally threaded fastener; and
a base comprising a standoff portion, a washer portion extending outward from the
standoff portion at an angle, and a retaining portion extending from the washer portion and
capturing the fastener to the base, wherein the washer portion is elastically deformable to
vary the angle of the washer portion to the standoff portion.
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16. The assembly of claim 15, wherein the washer portion is biased to a specific
angle relative to the standoff portion.
17. The assembly of claim 16, wherein the specific angle defines a range of
variation in the effective length of the standoff portion.
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18. The assembly of claim 15, wherein the elastically deformable washer portion
is generally conical.
19. The assembly of claim 15, wherein the elastically deformable washer portion
extends at an acute angle relative to the standoff portion.
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20. The assembly of claim 15, wherein the fastener is rotatable with respect to
the base.
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21. A method for making a fastener assembly, the method comprising the steps of:

providing an internally threaded fastener;

forming a base comprising a standoff portion, a washer portion extending from the standoff portion at an acute angle, and a skirt portion extending from a side of the washer portion opposite the standoff portion;

disposing the fastener at least partially within the skirt portion; and

plastically deforming the skirt portion with respect to the fastener to retain the fastener in assembly with the base.

22. The method of claim 21, wherein the fastener includes a peripheral flange extending radially therefrom, and wherein the skirt portion is deformed to capture the peripheral flange.

23. The method of claim 21, wherein the skirt portion is deformed with respect to the fastener to permit rotation of the fastener with respect to the base.

24. The method of claim 21, wherein the skirt portion is plastically deformed by a crimping operation.

25. The method of claim 21, wherein the standoff portion is formed to extend a predetermined length from the washer portion.

26. The method of claim 21, wherein the standoff portion forms a hollow right cylinder.

27. The method of claim 21, wherein forming comprises plastically deforming the washer portion to angle the washer portion relative to the standoff portion at an acute angle.

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28. A fastened joint comprising:

a first member;

a second member;

a stemmed fastener, comprising:

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a stemmed washer having a standoff portion, a spring washer portion integral with the standoff portion, and a retaining portion;

an internally threaded fastener retained in assembly with the stemmed washer by the retaining portion; and

an externally threaded fastener matingly engaged with the internally threaded fastener, the externally threaded fastener including a head;

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wherein the standoff portion extends through the first and second members and the first and second members are fastened between the spring washer portion and the head of the externally threaded fastener.

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29. The fastened joint of claim 28, wherein the spring washer portion is generally conical.

30. The fastened joint of claim 28, wherein the spring washer portion extends from the standoff portion at an acute angle.